

Amendments to the Claims

This listing of the claims will replace all prior versions and listings of the claims in the application.

1. (original) A method comprising:  
rendering a polygonal mesh to produce a computer-generated image, the image exhibiting aliasing at its discontinuity edges; and  
overdrawing the discontinuity edges as antialiased lines to reduce the aliasing.

2. (original) A method as recited in claim 1, wherein the polygon mesh comprises a set of triangles.

3. (original) A method as recited in claim 1, wherein the image is stored in memory after rendering, and the overdrawing comprises rendering the discontinuity edges as antialiased lines in the memory to reduce the aliasing at the discontinuity edges.

4. (original) A method as recited in claim 1, further comprising identifying the discontinuity edges as a collection of silhouettes and sharp edges.

5. (original) A method as recited in claim 1, further comprising:  
identifying sharp edges prior to said rendering; and  
finding silhouette edges during runtime, the discontinuity edges being a union of the sharp edges and the silhouette edges.

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2 6. (original) A method as recited in claim 1, further comprising shading  
3 the discontinuity edges.

4  
5 7. (original) A method as recited in claim 1, further comprising blending  
6 selected discontinuity edges.

7  
8 8. (original) A method as recited in claim 1, further comprising  
9 orienting the discontinuity edges in a consistent manner.

10  
11 9. (original) A method as recited in claim 1, further comprising  
12 asymmetrically blending selected discontinuity edges.

13  
14 10. (original) A method as recited in claim 1, further comprising sorting  
15 the discontinuity edges prior to said overdrawing.

16  
17 11. (original) One or more computer-readable media comprising  
18 computer-executable instructions that, when executed, perform the method as  
19 recited in claim 1.

20  
21 12. (original) A method comprising:  
22 determining discontinuity edges of a polygon mesh; and  
23 overdrawing the discontinuity edges as antialiased lines.  
24  
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1       **13.**   (original) A method as recited in claim 12, wherein said determining  
2 comprises identifying sharp edges and silhouettes.

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4       **14.**   (original) A method as recited in claim 12, wherein said determining  
5 comprises:

6       identifying sharp edges during a preprocess prior to rendering the polygon  
7 mesh; and

8       finding silhouette edges during runtime after rendering the polygon mesh.  
9

10       **15.**   (original) A method as recited in claim 12, further comprising  
11 shading the discontinuity edges.

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13       **16.**   (original) A method as recited in claim 12, further comprising  
14 blending selected discontinuity edges.

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16       **17.**   (original) A method as recited in claim 12, further comprising  
17 asymmetrically blending selected discontinuity edges.

18  
19       **18.**   (original) A method as recited in claim 12, further comprising  
20 orienting the discontinuity edges in a consistent manner.

21  
22       **19.**   (original) A method as recited in claim 12, further comprising  
23 sorting the discontinuity edges prior to said overdrawing.  
24  
25

1        20. (original) One or more computer-readable media comprising  
2 computer-executable instructions that, when executed, perform the method as  
3 recited in claim 12.

4  
5        21. (original) In a process for rendering computer-generated graphics, a  
6 method comprising:

7            constructing a data structure prior to rendering a polygon mesh; and  
8            finding silhouette edges in the polygon mesh during runtime using the data  
9 structure; and  
10           omitting concave silhouette edges from the data structure.

11  
12        22. (original) A method as recited in claim 21, further comprising  
13 overdrawing the silhouette edges as antialiased lines.

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15        23. (original) A method as recited in claim 21, further comprising  
16 shading the silhouette edges.

17  
18        24. (original) A method as recited in claim 21, further comprising  
19 blending selected silhouette edges.

20  
21        25. (original) A method as recited in claim 21, further comprising  
22 asymmetrically blending selected silhouette edges.

1        26. (original) A method as recited in claim 21, further comprising  
2 sorting the silhouette edges.

3  
4        27. (original) One or more computer-readable media comprising  
5 computer-executable instructions that, when executed, perform the method as  
6 recited in claim 21.

7  
8        28. (currently amended) In a process for rendering computer-generated  
9 graphics, a method comprising:

10        identifying sharp edges prior to runtime;

11        constructing a data structure prior to rendering a polygon mesh;

12        finding silhouette edges in the polygon mesh during runtime using the data  
13 structure; and

14        collecting the sharp edges and the silhouette edges in a list ~~to form~~ of  
15 discontinuity edges of the polygon mesh.

16  
17        29. (original) A method as recited in claim 28, further comprising  
18 shading the discontinuity edges.

19  
20        30. (original) A method as recited in claim 28, further comprising  
21 blending selected discontinuity edges.

22  
23        31. (original) A method as recited in claim 28, further comprising  
24 asymmetrically blending selected discontinuity edges.  
25

1        32. (original) A method as recited in claim 28, further comprising  
2 sorting the discontinuity edges.

3  
4        33. (original) One or more computer-readable media comprising  
5 computer-executable instructions that, when executed, perform the method as  
6 recited in claim 28.

7  
8        34. (original) A method comprising:  
9 rendering a polygonal mesh;  
10 determining discontinuity edges of the polygon mesh;  
11 sorting the discontinuity edges according to visibility; and  
12 overdrawing the discontinuity edges in an order resulting from said sorting.

13  
14        35. (original) A method as recited in claim 34, wherein said determining  
15 comprises:  
16 identifying sharp edges prior to said rendering; and  
17 finding silhouette edges during runtime, the discontinuity edges being a  
18 union of the sharp edges and the silhouette edges.

19  
20        36. (original) A method as recited in claim 34, wherein said sorting  
21 comprises sorting the discontinuity edges according to depth.

22  
23        37. (original) A method as recited in claim 34, wherein said  
24 overdrawing comprises overdrawing the discontinuity edges as antialiased lines.  
25

1       **38.**   (original) A method as recited in claim 34, further comprising  
2 shading the discontinuity edges.

3  
4       **39.**   (original) A method as recited in claim 34, further comprising  
5 blending selected discontinuity edges.

6  
7       **40.**   (original) A method as recited in claim 34, further comprising  
8 asymmetrically blending selected discontinuity edges.

9  
10       **41.**   (original) A method as recited in claim 34, further comprising  
11 orienting the discontinuity edges in a consistent manner.

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13       **42.**   (currently amended) One or more computer-readable media  
14 comprising computer-executable instructions that, when executed, perform the  
15 method as recited in claim ~~[[21]]~~ 34.

16  
17       **43.**   (original) A method comprising:  
18 rendering a polygonal mesh;  
19 identifying one or more silhouette edges of the polygon mesh for a given  
20 viewpoint; and  
21 overdrawing the silhouette edges as antialiased lines.

22  
23       **44.**   (original) A method as recited in claim 43, wherein the identifying  
24 comprises:  
25 constructing a data structure prior to rendering the image;

1 finding the silhouette edges during runtime using the data structure; and  
2 storing the silhouette edges in an output list.

3  
4 **45.** (original) A method as recited in claim 43, further comprising  
5 shading the silhouette edges.

6  
7 **46.** (original) A method as recited in claim 43, further comprising  
8 sorting the silhouette edges prior to said overdrawing.

9  
10 **47.** (original) One or more computer-readable media comprising  
11 computer-executable instructions that, when executed, perform the method as  
12 recited in claim 43.

13  
14 **48.** (original) A method comprising:

15 A. during a preprocess phase, performing the following:

16 identifying sharp edges present in a polygon mesh used to generate a  
17 graphical image;

18 constructing a data structure to store possible silhouette edges  
19 identified during a subsequent runtime phase;

20 B. during the runtime phase, performing the following:

21 rendering the polygonal mesh to produce a rendered image;

22 identifying silhouette edges that occur from a given viewpoint of the  
23 rendered image using the data structure, the silhouette edges together  
24 with the sharp edges forming a set of discontinuity edges;

25 shading the discontinuity edges;



1 sorting the discontinuity edges; and  
2 overdrawing the discontinuity edges as antialiased lines.  
3

4 **49.** (original) A method as recited in claim 48, wherein the sorting  
5 comprises sorting the discontinuity edges according to depth.  
6

7 **50.** (original) A method as recited in claim 48, wherein the shading  
8 comprises asymmetrically shading the discontinuity edges.  
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10 **51.** (original) A method as recited in claim 48, wherein the shading  
11 comprises applying blending processes that balance temporal smoothness and  
12 spatial sharpness.  
13

14 **52.** (original) A method as recited in claim 48, wherein the shading  
15 comprises orienting the discontinuity edges in a consistent manner.  
16

17 **53.** (original) A graphics computing device comprising:  
18 a memory to store a polygon mesh; and  
19 a processing unit to render the polygon mesh, the processing unit being  
20 further configured to overdraw discontinuity edges of the polygon mesh as  
21 antialiased lines.  
22

23 **54.** (original) A graphics computing device as recited in claim 53,  
24 wherein the polygon mesh comprises a set of triangles.  
25

1       **55.** (original) A graphics computing device as recited in claim 53,  
2 wherein the processing unit is configured to detect the discontinuity edges as a  
3 collection of sharp edges and silhouettes.

4  
5       **56.** (original) A graphics computing device as recited in claim 53,  
6 wherein the processing unit comprises:

7           a central processing unit configured to detect the discontinuity edges; and

8           a graphics processing unit configured to render the polygon mesh and to  
9 overdraw the discontinuity edges.

10  
11       **57.** (original) A graphics computing device as recited in claim 53,  
12 further comprising a frame buffer to store the rendered mesh, the processing unit  
13 being configured to render the discontinuity edges as antialiased lines in the frame  
14 buffer.

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16       **58.** (original) A graphics computing device as recited in claim 53,  
17 wherein the processing unit is further configured to shade the discontinuity edges.

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19       **59.** (original) A graphics computing device as recited in claim 53,  
20 wherein the processing unit is further configured to blend selected discontinuity  
21 edges.

1       **60.** (original) A graphics computing device as recited in claim 53,  
2 wherein the processing unit is further configured to orient the discontinuity edges  
3 in a consistent manner.  
4

5       **61.** (original) A graphics computing device as recited in claim 53,  
6 wherein the processing unit is further configured to asymmetrically blend selected  
7 discontinuity edges.  
8

9       **62.** (original) A graphics computing device as recited in claim 53,  
10 wherein the processing unit is further configured to sort the discontinuity edges  
11 prior to overdrawing them.  
12

13       **63.** (original) A graphics processing system comprising:  
14 a renderer configured to render a polygon mesh;  
15 a discontinuity edge detector configured to detect discontinuity edges in the  
16 polygon mesh; and  
17 an overdrawer configured to overdraw the discontinuity edges as antialiased  
18 lines to reduce the aliasing.  
19

20       **64.** (original) A graphics processing system as recited in claim 63  
21 further comprising:  
22 a data structure; and  
23 the discontinuity edge detector being configured to find silhouette edges in  
24 the polygon mesh using the data structure.  
25

1       **65.** (original) A graphics processing system as recited in claim 63  
2 wherein the discontinuity edge detector is further configured to identify sharp  
3 edges of the polygon mesh prior to rendering the polygon mesh.  
4

5       **66.** (original) A graphics processing system as recited in claim 63  
6 further comprising an edge sorter to sort the discontinuity edges according to  
7 depth.  
8

9       **67.** (original) A graphics processing system as recited in claim 63  
10 further comprising a shading module to shade the discontinuity edges using  
11 asymmetric blending.  
12

13       **68.** (original) A graphics computing device comprising the graphics  
14 processing system as recited in claim 63.  
15

16       **69.** (original) One or more computer-readable media comprising  
17 computer-executable instructions that, when executed, direct a graphics computing  
18 device to:

19       render a polygonal mesh;

20       detect discontinuity edges in the polygon mesh; and

21       overdraw the discontinuity edges as antialiased lines to reduce the aliasing.  
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23  
24  
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1       **70.**   (original) One or more computer-readable media as recited in claim  
2 69, further comprising computer-executable instructions that, when executed,  
3 direct the graphics computing device to:

4       identify sharp edges prior to rendering the polygon mesh; and  
5       find silhouette edges after rendering the polygon mesh, the discontinuity  
6 edges being a union of the sharp edges and the silhouette edges.

7  
8       **71.**   (original) One or more computer-readable media as recited in claim  
9 69, further comprising computer-executable instructions that, when executed,  
10 direct the graphics computing device to shade the discontinuity edges.

11  
12       **72.**   (original) One or more computer-readable media as recited in claim  
13 69, further comprising computer-executable instructions that, when executed,  
14 direct the graphics computing device to sort the discontinuity edges according to  
15 depth.

16  
17       **73.**   (original) One or more computer-readable media as recited in claim  
18 69, further comprising computer-executable instructions that, when executed,  
19 direct the graphics computing device to:

20       orient the discontinuity edges in a consistent manner; and  
21       blend the discontinuity edges using asymmetric blending.

22  
23       **74.**   (currently amended) A system comprising:  
24       means for identifying sharp edges present in a polygon mesh;  
25       means for rendering the polygonal mesh to produce a rendered image;

1 means for identifying silhouette edges that occur from at least one  
2 viewpoint of the rendered image;

3 means for shading the ~~discontinuity~~ sharp edges and the silhouette edges;

4 means for sorting the ~~discontinuity~~ sharp edges and the silhouette edges;

5 and

6 means for overdrawing the ~~discontinuity~~ sharp edges and the silhouette  
7 edges as antialiased lines.

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